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ABSTRACT

These guidelines address the need for valid and reliable measures to aid in making decisions on teaching of braille and/or print to students with moderate to severe vision losses. After an introductory section, section 1 presents basic principles organized into the following categories: (1) learning media, (2) students who use the learning media, (3) selection of learning medium/media, and (4) use of learning media in educational settings. Section 2 addresses assessment and evaluation, detailing both individual child attributes to be measured and educational and noneducational environmental attributes to be measured. Section 3 presents 16 guidelines for decision making in selection of learning media. These include: low vision children must have annual low vision evaluations; some children show definite preferences for either visual or tactual learning at an early age; some low vision students may utilize both braille and print for selected purposes; keyboarding and auditory materials are valuable supplements; and flexibility is the key to the use of all types of media for maximum literacy. An appendix contains data on the prevalence of visual impairment, reading media and program type, and reading speeds of visually impaired students, and American Printing House distribution of federal quota based on the registration of eligible students, 1988-1990. A second appendix contains additional information by national organizations and a list of functional vision assessment instruments, and a chart which defines the levels of visual disability discussed in section 3. (Section 3 and Appendix B contain bibliographies with a total of 33 items; section 3 contains 26 additional references. (DB)

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Print and Braille Literacy

ED 377 652

Selecting Appropriate Learning Media

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Hilda Caton, Ed.D.
Editor

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Print and Braille Literacy

■ Selecting Appropriate Learning Media

Hilda Caton, Ed.D.
Editor

American Printing House for the Blind

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ACKNOWLEDGEMENTS

On June 8-9, 1990, a committee of experts in the field of education of visually impaired students met at the American Printing House for the Blind to develop a set of guidelines to assist teachers of the visually impaired in selecting the appropriate learning media for their students. This document contains the guidelines developed by the committee.

The members of the committee making these recommendations are:

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- Hilda Caton
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- Norman Anderson, Teacher, Maryland School for the Blind, Baltimore, Maryland
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- Fred Schroeder, Director, New Mexico Commission for the Blind, Santa Fe, New Mexico and a member of the Board of Directors, National Federation of the Blind
- Susan Spungin, Associate Executive Director, American Foundation for the Blind New York, New York

ACKNOWLEDGEMENTS

The vignettes in this work are included as written by visually impaired persons who, at some point in their lives, have used both braille and print as their primary reading medium. They provide insight from visually impaired persons regarding the problems of selecting the appropriate learning medium/media for visually impaired children.

- Fredric K. Schroeder, Santa Fe, New Mexico
- Lenore Dillon, Indianapolis, Indiana
- Warren Figueiredo, Baton Rouge, Louisiana
- Vivian Pohlmann, Hastings, Nebraska
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"I could not imagine that techniques used by the blind could allow me to function competitively."

When I was seven years old, I became legally blind from a condition known as Stephens-Johnson's Syndrome. This left me with visual acuity in the neighborhood of 20/400. Prior to this time I was fully sighted and had completed first, and one-half of second, grade receiving ordinary print reading instruction.

Because of associated health problems, I remained at home for two and one-half years, receiving home teaching services from the local school district. At that time, there were no special education services available for low vision children, and the concept of "sight saving" was generally held by practicing opthalmologists. For this reason, all of my lessons were conducted orally — two to three times a week for an hour at a time. At the age of ten, I returned to public school, participating in a regular fifth grade class. While I was not aware that I would eventually lose the remainder of my sight, my mother must have been informed and began searching for someone to teach me braille. Since I had some sight, I did not regard myself as a blind person, and therefore, had no interest in learning braille. Additionally, my poor eyesight mostly represented a source of embarrassment for me, resulting in an aversion to learning braille. I would much rather have hidden my eye problem, rather than making it public through braille reading.

While the home teacher was diligent, I never practiced between lessons, and read the braille visually rather than by touch. He was using the Illinois Series, which used single-sided braille for the first two books, allowing me to read it visually without too much problem. When I got to the third book, which was inter-point braille, I could no longer read the material with my eyes, causing frustration by me and my teacher, with the end result of braille instruction being dropped.

Throughout school, I was exempt from any assignment which I could not see well enough to complete. As can be imagined, my education was limited primarily to what I could pick up from sitting in class.

Toward the end of junior high school, my vision began deteriorating further. A long series of eye surgeries ensued, resulting in total blindness at the age of sixteen. At this point, I was in the Fall semester of my senior year of high school and was again receiving home instruction, since my many eye surgeries prevented me from attending school. A home teacher again provided me with the Illinois Braille Series which I used to teach myself braille. After completing

the Illinois Series, I read my first novel — *Animal Farm*. When I began, I was reading a page in forty-eight minutes. One hundred fifty-five pages later, when I finished the book, I was reading a page in sixteen minutes. My slow reading rate was due to poor braille reading techniques associated with being self-taught, coupled with a lack of reading experience, overall. I read with the index finger of my right hand only-scrubbing up and down, and back-tracking frequently. My general lack of literacy was a major impediment to acquiring any reasonable proficiency in braille. I can remember puzzling over the word "neighbor", which seemed incomprehensible with my limited knowledge of phonics.

I wish to stress that my experience with print and braille reading must not be viewed simply as an example of poor training. As a young child, blindness represented inferiority to me and a constant source of feelings of inadequacy. I believed that I was less capable than others, and believed it was due to my poor vision. I could not imagine that techniques used by the blind could allow me to function competitively. Some training was available to me, but my own attitudes about blindness caused me to reject braille at the cost of self-confidence and basic literacy.

• *Frederic K. Schroeder*
Santa Fe, New Mexico

INTRODUCTION

> In today's information age, there can be no question that literacy represents the primary tool by which individuals compete. Literacy, unlike other skills, is not an end in itself, but rather the means to a virtually unlimited variety of ends. It is the very key to prosperity, since literacy opens the way to information by tearing down barriers of myth and ignorance (Schroeder, 1989, p. 290)

This statement by Schoreder represents the underlying foundation of concerns relating to the "literacy" of many visually impaired persons. For purposes of these guidelines, literacy is defined as the ability to read and write *(World Book Dictionary, 1982)*. Schroeder goes on to say that, in order to compete effectively and, thus, be successful in life, visually impaired persons must be able to communicate with many persons on many levels at different points in their lives. This requires the ability to communicate in the medium which is most appropriate in a specific situation.

In recent years, there clearly has been a growing awareness of the decrease in braille reading and writing in the United States both from consumers using the braille system and from providers of services who teach or produce materials in braille (Spungin, 1990). The result of this decrease is that many visually impaired persons are *not* able to communicate in the appropriate medium in a specific situation. Therefore, they are not able to compete effectively in society today and, thus, are unable to achieve the goals toward which they strive.

The obvious response to this problem of decreased braille literacy is to attempt to identify its causes and find its solutions. Many explanations and counter explanations of the causes have been proposed. Spungin (1991) identifies and discusses the most frequently cited causes, expands upon them, and proposes some possible solutions to the problem. Although her entire discussion is extremely relevant to the overall purpose of these guidelines, much of it is beyond their immediate scope. However, the following statement from her discussion exemplifies the basic purpose of these guidelines.

> We need to define what we mean by blind children and braille users and to develop appropriate reliable assessment measures that allow decisions to be made on the use of braille or print or both. Such areas as the working distance from the page, the portability of reading skills, reading rates and accuracy, visual fatigue, and the proper interpretation of the results of assessments all lend themselves to objective measurement and could easily serve as a basis for a uniform assessment tool. *Children who do not fit neatly into the categories of braille or print users deserve the option of learning both braille and print until they can make their own informed choice.*

INTRODUCTION

These guidelines are intended to address the need for valid and reliable measures for making decisions on the appropriate learning medium/media, and on teaching of braille or print reading or both. Since they are "guidelines" they do not contain formalized tests or other formalized assessment procedures. They contain, instead, a process or a procedure which can be used to evaluate individual children and to make preliminary decisions regarding the appropriate learning medium/media they will need at various times in their lives. More detailed assessment instructions need to be developed later.

It is important that these guidelines be viewed in the context of prevailing social attitudes toward blindness. In particular, persons using them need to be aware that, while diagnosis, prescription, and evaluation are extremely important in identifying the most appropriate learning medium, it is almost impossible to conduct such activities in a totally objective manner. For example, attitudes towards braille on the part of evaluators, teachers, parents, peers, and the visually impaired student may influence the selection of the learning medium since braille is, to some, a symbol of blindness.

Target Population

The target population for the guidelines is teachers, parents, paraprofessionals, and others who are directly responsible for determining the skills visually impaired children will need to become productive, competitive participants in the vocational fields they choose to enter as adults. The target student population addressed by the guidelines is primarily the population of visually impaired children with moderate to severe vision losses (Colenbrander, 1977; Barraga, 1986) and in some cases, children with less severe losses, but deteriorating eye conditions which will result in severe losses later. It is, of course, understood that students with mild vision losses will use print materials and students who are totally blind will use braille materials.

The major goal of these guidelines is to insure that every visually impaired student will have adequate opportunity for learning to use the medium/media, most appropriate for his/her needs — in other words, the opportunity to become LITERATE!

The basic philosophy of those responsible for developing the guidelines was summarized by Mangold (1990) as:

Equal Access To Education
Implies
Equal Access to Information.

"I would have liked to have been given a choice. . ."

Until the age of seventeen I was legally blind as a result of congenital cataracts. Both my primary and secondary education were provided in a public school setting. All of my reading experiences were limited to the use of print. At that time, I had never been introduced to braille, tape recordings, talking books, or any other specialized equipment or services available to the visually impaired student.

Although my visual acuity was low, I was able to function well visually. I felt as if the use of print met both my educational and personal needs. If I had been introduced to braille, I would have resisted.

At the age of seventeen, I unexpectedly developed vision problems and lost the remainder of my sight. Upon the onset of total blindness, I was eager to add braille to my repertoire of skills. After a few short lessons I quickly became a braille enthusiast. Not only did I learn how braille could assist me in the future, I also saw how the use of braille could have assisted me in the past.

I am confident that the use of braille would have enhanced my academic skills, and would have made my educational experience more enjoyable. With the use of braille, reading could have been a pleasure, not just a necessary task.

As I look in retrospect upon my educational career, I would have liked to have been given a choice. Although I would have selected print as my primary method of reading, I would have appreciated being made aware of all the educational options which are available.

• *Lenore Dillon*
Indianapolis, Indiana

SECTION I ■

BASIC PRINCIPLES

This section outlines some basic principles which should be understood by persons who are responsible for selecting the appropriate learning medium/media for visually impaired children. These are not necessarily inclusive of all principles related to this task, but they encompass the major principles to be understood.

The basic principles are presented in categories as follows: (1) Learning media, (2) Students who use the learning media, (3) Selection of learning media, and (4) Use of learning media in educational settings.

Learning media

1. Both braille and print afford equal opportunity for mastery of basic literacy skills only if they are appropriately applied.
2. Both braille and print *must* be viewed positively by students, teachers, and other service providers. Every effort should be made to extinguish the negative attitudes toward blindness which translate into negative attitudes toward braille so that decisions regarding the selection of appropriate learning media will be based only on the needs of the student.
3. Appropriately applied technology will enhance braille, print, and/or auditory skills if the devices provide quantities of correctly transcribed braille, high quality print displays, and/or intelligible auditory output.
4. Auditory training is extremely important for visually impaired children. However, since this document focuses on print and braille literacy, a detailed discussion of auditory training is not included.

Students who use the learning media

1. Students learn and develop as individuals, not as a group. Therefore, it is important to identify the medium/media which most benefits each student. For example:
   - some students may benefit most from using print only.
   - some students may benefit most from using braille only.
   - some students may benefit most from using both print and braille.
2. Some students may not be able to benefit from either braille or print, thus necessitating complete dependence on an auditory medium.

3. All students may benefit from an auditory medium regardless of the other medium/media they use.
4. The degree to which a given student uses a specific medium will be influenced by many factors: age, general ability, visual and tactual functioning, visual prognosis, motivation, academic/nonacademic demands, environmental conditions, personal/interpersonal factors such as acceptance of one's blindness, reaction to societal attitudes about blindness, and lack of exposure to braille.
5. It may take an extended period of time for a visually impaired student to master the multimedia he or she will be required to use.

Selection of learning medium/media

1. The key element for decision makers is to select the medium/media which enables the student to be most proficient in learning and in life achievement.
2. A multidisciplinary approach to assessment, evaluation, and curriculum planning is essential in order to select a learning medium/media which will meet the literacy demands of visually impaired children. Both parents and educational professionals who are trained to work with visually impaired students must be included in the decision making process.
3. Selection of the learning medium/media must be based on a variety of types of information which is collected over an extended period of time. The types of information should include observation of student use of media in educational settings, systematic diagnostic teaching techniques, and a variety of assessment procedures (see Section III — Assessment and Evaluation).
4. Since learning is dynamic, the selection of specific learning medium/media may change for individual students as their academic and vocational demands change and as eye conditions change.
5. Since an individual student's media needs and preferences may change, continuous observation, assessment, and diagnostic teaching must occur throughout his or her educational career.

SECTION I ■

BASIC PRINCIPLES

Use of selected learning media in educational settings

1. The learning medium/media selected should be applicable in a variety of educational settings, both in school and in the community.

2. The most appropriate learning medium/media must be selected first and then a delivery system must be designed to meet the needs of the student(s) who use the medium/media. The prevailing service delivery system should *not* influence the selection of the learning medium/media.

3. Some students will demonstrate a preference for a primary learning medium at some time in their educational careers. Teachers and other service providers should be aware that some children are affected by societal attitudes to the extent that they will indicate a preference for the medium considered most acceptable by society and not the medium which is most approrpiate for them.

4. Special attention should be given to the time in a student's educational career when instruction in the use of both media is begun. The following facts must be considered in making this decision:

   a. Some young students may not demonstrate a preference for either visual or tactile pre-school readiness materials. It is *extremely* important that these children receive *early* instruction with all types of media in order to determine *later* which will be the most appropriate learning medium/media for them.

   b. Because the reading load in higher grades in heavier, this is not a good time for students to begin instruction in a new medium. Students who are going to use both print and braille should be introduced to both media as early as possible and in the primary grades.

   c. Some students may have trouble moving from one learning medium to another and may need specific instruction to learn to use each medium most efficiently.

5. The following principles related to classroom performance of visually impaired students are of critical importance:

   a. Expectations related to academic achievement should be the same for visually impaired students and normally sighted students.

b. It is possible that diminishing classroom or homework assignments or accepting poorer quality in work may camouflage the need to change the medium. However, the nature of the eye disorders of some children may cause extreme fatigue, extremely restricted fields may result in very slow reading, etc. In these cases, teachers and other decision makers may have to make some adjustments in the amount of time or work required of the visually impaired student.

c. Students who have trouble keeping up with sighted classmmates academically should be helped to understand that the problem *may be* caused by the presentation of the material rather than their blindness or the learning medium they are using.

6. Successful performance of the visually impaired student in the classroom and in other educational settings rests with both the parent and the professional, for only with encouragement, positive reinforcement, and an enthusiastically taught, carefully sequenced curriculum will the student have an opportunity to reach his/her full potential.

"I will never be illiterate."

Most of my classmates with low vision and I learned to read braille when we entered the Louisiana State School for the Blind in 1958. We had to wear apron-like shades so that we would not peek at the dots. Many of us loved reading and read anything we could get our hands on. The fact that we were reading braille did not really matter. Our teacher said we would learn to read print after we had mastered all of the braille contractions.

In the first grade we used Perkins Braillers; as second graders we learned to write on a slate and stylus. In third grade, after I learned all of my contractions, I was taught to read print in the sight saving class. Instead of reading my braille letters with a teacher's transliterations, the family learned to decipher my rudimentary scrawl. The ability to function visually was one of the factors taken into consideration when I returned home next term to attend school in my own parish. Resource teachers of the visually impaired in rural areas of my state were unheard of at that time. Occasionally I would receive a stack of large print books from the textbook depository which were randomly chosen and which I never used; I preferred to read using a handheld magnifier which had been prescribed by a local doctor. The closest I came to having a functional vision assessment happened when one of my teachers told a subsitute teacher not to be concerned about the distance of my nose to the page because if I could smell it, I could read it. The only braille I encountered during those five years were letters from friends and braille labels on talking book records.

I returned to the School for the Blind for my high school years. Large print was standard fare so that's what I read, however I wrote my assignments in either print or braille depending on the primary reading medium of my teachers. I did refresh my rusty braille skills by independently working through M. Loomis's *You Can Learn to Read Braille.*

In college I functioned primarily as an aural reader using recorded texts for all subjects except foreign language and math. From time to time when I tired of writing in longhand, I would make braille notes because these hastily written notes were more legible in their braille versions.

My personal use of braille continued as I became a teacher of the visually impaired. I have relied on braille notes in class so that I could look at students rather than have my head being buried in some document. Grading papers seemed easier if I used braille answer keys with print papers and vice versa.

Today braille is my secondary reading medium. I am grateful to have learned it. I will admit that serendipity rather than deliberate educational

planning brought about the results. For the most part, my blind teachers wanted me to use braille and my sighted teachers wanted me to use print. In any event, braille comes in handy now and if my visual functioning should decrease or disappear, I will be able to make fuller use of it. I will never be illiterate.

• *Warren Figueiredo*
Baton Rouge, Louisiana

SECTION II ■

ASSESSMENT AND EVALUATION

P.L. 94-142 is the "Education for All Handicapped Children Act of 1975." P.L. 99-457 of 1986, reauthorizes existing Education of the Handicapped discretionary programs and amends P.L. 94-142 to include incentive money for states to serve children from birth to age five. P.L. 101-476, The "Individuals with Disabilities Act," of 1990 renamed and amended the 1975 Act. These laws mandate a nondiscriminatory evaluation of handicapped children prior to the decision to provide special services and the decision as to the type of placement to be made for each child. Comprehensive assessment is required prior to the establishment of educational goals and the development of the Individual Education Plan for each handicapped student.

Because the selection of the appropriate learning medium/media has a direct relationship to the goals of literacy to be attained by visually impaired children, it is critically important that these goals, at any level of the educational program, *must* relate directly to the sense modalities and the selection of the learning medium/media by which they will learn. Assesement of literacy goals and learning media must be a continuing process, occurring a minimum of one time a year and more frequently if necessary. Such an assessment must indicate the present level of performance in *each* learning medium and provide justification for change, addition, or deletion of a learning medium to assure each student's access to literacy to the greatest extent possible.

The following section on assessment and evaluation is intended as a guide to those involved in developing the goals and Individual Education Plans for visually impaired children. It should also assist in the selection of the appropriate learning medium/media for these children. It should be noted that this section is intended as a guide only. It provides suggested areas for assessment and evaluation. It does not provide detailed description of assessment procedures. It is important to understand that, in addition to the data resulting from these assessment procedures, decisions regarding the selection of the appropriate learning medium/media for visually impaired children must also take into consideration the attitudes of society and the visually impaired toward blindness and the medium/media selected.

The areas included in this section are (1) target students, (2) assessment components, (3) process of assessment, (4) evaluations of teachers and materials availability, and (5) summary.

SECTION II ■

ASSESSMENT AND EVALUATION

Target Students

The target population of students to whom these assessment procedures apply is as follows:

- Children who are congenitally blind.
- Children who are adventitously blind.
- Children with low vision (moderate to severe).
- Children with degenerative eye conditions.
- Children who have the potential to learn to read and write.
- Students from birth to 21 years of age.

Components

The following assessment components need consideration in determining the extent to which print, braille, and/or auditory skills will enhance learning of the students in the academic environment and in the nonacademic environment. Every visually impaired child (especially a low vision child) needs an annual comprehensive medical and educational evaluation beginning by the age of three or as early as possible. The following procedure is recommended:

A. Individual Child Attributes to be Measured

In order to select the appropriate learning medium/media for visually impaired children the following information must be obtained for each child. This information must be obtained on a continuing basis as the child's needs (visually and in other areas) change.

1. Eye examination by opthalmologist or optometrist to determine:
   a. diagnosis: Has all medical/surgical care been provided?
   b. stability: What is the prognosis for further vision loss?
   c. treatment: What is the affect of medical/surgical intervention on visual behavior?
2. Functional vision assessment by clinical low vision specialist designed to:
   a. Develop functional visual profile which includes:
      (1) distant/near/intermediate visual acuities
      (2) refraction
      (3) contrast sensitivity function (CSF)
      (4) binocularity
      (5) central/peripheral fields

(6) optimum visual environment: glare recovery; illumination needs

(7) color vision

(8) ocular-motor skills

(9) prescription and nonprescrription optical and nonoptical devices

b. Assist in assessment of cognitive skills with teacher of visually impaired.

3. Educational assessment by persons trained to work with visually impaired children to determine child's strengths and weaknesses in the following areas:

a. Congitive development

(1) language development

(2) concept development

(3) reading/writing comprehension

(4) intellectual development

(5) visual discrimination/perception

(6) tactual discrimination/perception

(7) auditory discrimination/perception

b. Affective development

(1) functional development

(2) socialization skills

(3) interests — recreational and vocational

(4) motivation for literacy

(5) attitude/motivation to visual learning medium

(6) attitude/motivation to tactual learning medium

(7) attitude/motivation to auditory learning medium

c. Psychomotor developement

(1) general health

(2) stamina — physical/visual endurance/fatigue factors (How long can the child use vision efficiently?)

(3) gross motor skills

(4) fine motor skills

(5) orientation and spatial skills

(6) mobility skills

d. Classroom and other learning environments assessment

(1) child's ability to function visually or tactually in the classroom

(2) child's ability to keep up with educational tasks

(3) child's ability to participate in school social/recreational activities

e. Family assessment

(1) support/services

(2) family involvement

(3) family attitudes and values

B. Educational and Noneducational Environmental Attributes to be Measured

In order to select the appropriate learning medium/media for visually impaired children, the quality and availability of the resources in the educational environment must be assessed. The lack of quality and availability of these resources should *not* be used as a reason for selection of the learning medium/media. The results of assessment in the areas should be used to require that the resources be provided in the eduational environments.

1. Teacher knowledge of braille codes and teaching methodology

a. literary braille code

b. Nemeth braille code for mathematics and science

c. foreign language braille codes

d. music braille code

e. computer braille code

f. procedures for teaching braille

SECTION II ■

ASSESSMENT AND EVALUATION

2. Teacher knowledge of concepts relating to low vision
   a. functional vision evaluation
   b. process of visual development
   c. use of optical and nonoptical devices

3 Availability of appropriate materials
   a. in braille
   b. in print
   c. on tape
   d. machine access/technology

4. Quality of educational environments (External influences)
   a. classroom environment
   b. home environment
   c. community environment

5. Quality of noneducational environments (Internal influences)
   a. medical factors
   b. motivational factors
   c. social/psychological factors

6. The ability of the educational and noneducational environments to accomplish the following must be assessed:
   a. academic fluency
   b. adjustment to learning medium/media (braille, print, auditory)
      (1) student
      (2) peers
      (3) teachers and paraprofessionals
      (4) family
      (5) community

SECTION II ■

ASSESSMENT AND EVALUATION

Instruments

Specific assessment instruments available to measure all factors which influence the selection of the appropriate learning medium/media for visually impaired children are extremely varied and change continually. Therefore, specific instruments are not listed by name. (Additional information regarding assessment and evaluation can be found in Appendix B.) Instead, specific types of instruments which can be used are given below.

A. Tests — norm-referenced and criterion referenced
B. Checklists and scales — functional vision, development, etc.
C. Interviews — with students and significant others
D. Observation — of students and environments

Summary

Assessment is an ongoing process. It should result in a program which allows a visually impaired student to realize, as a minimum, the same goals as sighted peers, allowing the opportunity for:

1. self-actualization
2. positive self-esteem
3. transference of learning skills to the home and community environment
4. assurance of the full potential of the visually impaired child in the competitive world

"I learned to read three times."

I learned to read three times. Because of visual problems from birth, I attended a visually handicapped program in the Chicago Public School system. I was taught braille and I can remember seeing the dots and reading with my eyes as well as my fingers. When I completed the first grade, my parents moved from the city. Then I attended a public school system that did not have a braille classroom but did have a Sight Saving class for partially sighted students. I started learning to read again, this time with large print. I was in this classroom for two years when I lost all of my vision and re-entered the Chicago Public School system to relearn braille.

Since I learned to read both braille and large print in my early school years, I feel it was beneficial to learn both. I feel that those people with partial vision should be encouraged to use the vision they have. I feel partially sighted students should be taught large print, but should have the option to learn braille if they so desire.

• *Vivian Pohlmann*
Hastings, Nebraska

SECTION III ■

GUIDELINES FOR DECISION MAKING IN SELECTION OF LEARNING MEDIA

The guidelines presented in this section are crucial for making decisions regarding the selection of a learning medium/media for visually impaired children. It is essential that those making these decision become familiar with them.

- **All visually impaired children have individual needs**

Because each child is an individual, learning needs vary in relation to specific characteristics and assessment information, whether in special or regular classrooms.

- **Visually impaired children must use all sensory channels for input in learning**

In the early learning years, children need opportunities to use all sensory modalities in exploration and interaction with the environment for gathering and using information. For example, they learn by touching, looking, listening, smelling, and tasting as many materials as feasible.

- **A variety of discrimination and recognition activities designed for all functional sensory channels is critical.**

During the readiness preparation for development of communications skills, children with visual impairments need a variety of discrimination and recogition activities (tactual, auditory, motor) designed for all functional sensory modalities in each child.

- **Low vision children must have low vision evaluations, at least annually.**

As outlined in the assessment section, it is imperative that every low vision child have an annual comprehensive clinical and educational evaluation beginning by age three or as early as possible.

- **Some children prefer vision or tactual learning at an early age.**

By kindergarten/first grade some children will show a preference and are more comfortable with either visual or tactile materials, whereas many others give no clear indication of preference at this age. Most children will show a definite preference at some point during their educational careers.

- **Blind children and those with profound visually disability will need to use braille.**

For blind students and those with profound low vision (Colenbrander, 1977; Barraga, 1986), prereading and reading material of a tactile nature will be most appropriate.

SECTION III ■

GUIDELINES FOR DECISION MAKING IN SELECTION OF LEARNING MEDIA

- **Some children will continue to use both print and braille for some educational tasks.**

A few children with severe visual disability (Colenbrander, 1977; Barraga, 1986) may not demonstrate a preference for either visual or tactile readiness materials, but utilize all materials whether of a visual or tactile nature for various educational tasks.

- **Many children with moderate visual disability will use print with or without optical devices.**

Students with moderate visual disability (Colenbrander, 1977, Barrage, 1986) who show a preference for visual learning and who are efficient in discriminating and recognizing visual symbols (figures, letters, words, etc.) with or without optical devices, will probably benefit from visual readiness materials.

- **Some low vision students benefit from both braille and print materials until proficiency is demonstrated in a dominant medium.**

The selection of any one reading medium may need to be delayed for some children until more extensive exposure and evaluation gives evidence of greater proficiency and/or preference for either print or braille.

- **Ongoing exposure to technology will help develop literacy skills.**

Experiences with all types of technology and devices for early development of reading and writing will help prepare students for future literacy skills.

- **Some low vision students may utilize both braille and print for selected purposes.**

At some time during the elementary years evidence will usually suggest a dominant medium (either braille or print) for low vision students in some curricular areas. A secondary medium may be useful in other curricular areas and/or for personal use.

- **Some low vision students may learn to write cursive more easily than manuscript.**

Some low vision students will write cursive more legibly than manuscript and will find it easier to learn from the beginning (rather than manuscript), first at a chalkboard (gross motor), then transfer to the desk (fine motor).

SECTION III ■

GUIDELINES FOR DECISION MAKING IN SELECTION OF LEARNING MEDIA

- **Consider a variety of critical factors in making decisions.**

Careful consideration needs to be given to such contigency factors as: physical and visual fatigue; expenditure of energy and stamina; distance from the page; quantity of reading and writing required; portability of devices, equipment and books; size of print; and availability of optical devices.
(See page 13.)

- **Use of slate and stylus is important for blind students.**

For blind students, use of the slate and stylus in writing is desirable as soon as there is sufficient strength and motor control, a sense of directionality, and concepts of reversal.

- **Keyboarding and auditory materials are valuable supplements.**

By the middle elementary years, (if not sooner for some students), typing/keyboarding and use of auditory materials as supplements to either braille or print use can facilitate refinement of communication skills, particularly in spelling.

- **Flexibility is the key to the use of all types of media for maximum literacy.**

Flexibility in the use of all media throughout the school years will enhance the practical carry-over to literate functioning throughout life; for example, such reading as maps, time tables, libraries, and food and medicine packages.

"I will continue to see, but not to the degree that I have in the past..."

I was born in 1957 with an eye condition known as Optic Nerve Hypoplasia. At that time there was not such a label, therefore I was given the label Optic Nerve Atrophy. During my first few years of life (which I mainly spent in the children's section at Riley Hospital, Indianapolis), I did not display usable vision. As I matured, my vision increased to the point that I was considered a print reader. I began my elementary years as a print student, but at 6 years of age, I began developing chronic eye infections in the eye I see out of. At that time I worked on beginning braille. My eye doctor wanted to enucleate my good eye, but I argued (begged is a better word) for a little more time and treatment, and luckily for me the infections were brought under control. Happily for me, I resumed print training. I completed my high school career as a print reader.

At the college level, I could not keep up with the vast required reading, so I used a combination of magnification for reading, many readers, and texts on tape (I utilized a speech compressor).

As an adult, I have experienced a graduating loss of time that I can read print each day. For example, my reading time used to be two hours. Now my reading time is approximately 20 minutes. I resumed braille training as an adult because I needed the credits for my teacher's license — I hated the class to the point that I barely studied (I still received a "B"). During the following year, my daily print reading time diminished greatly, and I suddenly found myself appreciating what braille might do for me. I went through braille transcribers course (in the process discovering that there were many things I did not understand about print). Since that time I have worked diligently to develop my tactile reading skills (I feel I am now slow, but accurate).

I currently use Braille n' Speak to do most of my note taking and report writing; I then run the data through my IBM. I use a combination of listening to my notes and reports, and converting some material into braille (print for my bosses).

At this time, my eye doctors (at Riley) tell me that the muscles of my eyes are deteriorating (Marcus Gunn Syndrome) and that surgery at this stage would only be for cosmetic reasons. Obviously the Optic Nerve Atrophy is as it always has been. My nystagmus is as it always was. I guess the bottom line is that I will continue to see, but not to the degree that I have in the past — which does not really matter to me now.

• *William R. Powell*
Indianapolis, Indiana

BIBLIOGRAPHY

Barraga, N. (1986). Sensory perceptual development. In B. Scholl (Ed.), *Foundations of education for blind and visually handicapped children and youth: Theory and practice.* New York: American Foundation for the Blind, pp. 83-98

This chapter details sensory perceptual development of visually impaired children. Discussion of the visual system (pp. 86-90) is particularly relevant to these guidelines.

Cates, D. L., & Sowell, V.M. (1989). Using computers to improve braille reading speed: A review of the literature. *Journal of Visual Impairment & Blindness, 83,* 361-364.

Technological advances in the tactile display of braille generate the need to train blind students in a medium other than paper braille. This article examines the literature on approaches to improving braille reading rates and how the use of cassette braille devices, tachistoscope-like equipment, and computer technology can accomplish this goal.

Colenbrander, A. (1977). Dimensions of visual performance. *Archives of American Academy of Opthalmology, 83,* 332-337.

This publication contains definitions and descriptions of degrees of visual loss.

Corn, A., & Ryser, G. (1989). Access to print for students with low vision. *Journal of Visual Impairment & Blindness, 83,* 340-349

This article reports on a study of the information provided by 109 teachers related to issues surrounding the use of large type and optical devices, such as teachers' confidence in instructing students to use optical devices and the criteria used to choose reading modes for individual children. The teachers completed questionnaires for 351 students in graded classes and 48 students in self-contained classes on such topics as reading speed, reading achievement, fatigue factors, and reasons for the nonuse of prescribed optical devices.

Council of Executives of American Residential Schools for the Visually Handicapped. (1990). Literacy for blind and visually impaired school age students: A position paper of the Council of Executives of American Residential Schools for the Visually Handicapped. *RE: view 22(3),* 159-163.

This article discusses issues in the current debate over literacy for blind and visually impaired students and the positions adopted by the Council on those issues. The entire paper is included in Appendix B of this document.

Crespo, S.E. (1989). The braille system in Latin America. *Journal of Visual Impairment & Blindness, 83,* 317-318.

This short article reports the resistance to Grade 2 braille still demonstrated by Latin American schools' principals and teachers. Reasons for this resistance are given as well as strategies used to promote the use of abbreviated braille.

Gashell, J (1988). National convention calls for braille literacy. *Future Reflections,* Fall, 31-32

Reported is the resolution adopted by the 1988 NFB National Convention concerning braille literacy. The resolution urges the federal government and the states to promote laws and programs to bring greater literacy skills to blind people of all ages.

Selected Resources Addressing Braille Literacy ■

BIBLIOGRAPHY

Huebner, K.M. (1989). Daily uses of braille as told by four adult braille users. *Journal of Visual Impairment & Blindness, 83,* 308-309.

A listing of routine applications of braille, provided by four adult users of this critical communication tool, illustrates the fact that braille readers and writers use this medium in the same way as sighted individuals use print.

Koenig, A.J., & Holbrook, M.C. (1989). Determining the reading medium for students with visual impairments: A diagnostic teaching approach. *Journal of Visual Impairment & Blindness, 83,* 296-302.

A two-phase process used by multidisciplinary teams in selecting a reading medium for students with visual impairments is described. This article: (a) investigates the need for, and applicability of, a diagnostic teaching approach to help in the determination of the initial decision on the suitable reading medium for visually impaired students; (b) discusses four areas of importance for educators and parents to consider in making initial decisions; and (c) describes on-going evaluation and adjustment of the initial medium.

Koenig, A. J. & Holbrook, M. C. (1991). Determining the reading medium for visually impaired students via diagnostic teaching. *Journal of Visual Impairment & Blindness,* 85(2), 61-68.

To gather information on the reading medium of students with visual impairments, a systematic process is required. This article presents information on the application of a diagnostic teaching approach for determining the reading medium and for the ongoing evaluation of the initial decision. Checklists are included that will help in the collection of data to be considered by the multidisciplinary team, and two case studies are discussed to illustrate their appropriate use.

Mack, C. (1989). The impact of technology on braille literacy. *Journal of Visual Impairment & Blindness, 83,* 314.

A promising outlook of technology's impact on braille literacy is presented by a computer resource specialist. Not only do computers increase the volume of braille produced, they also make available a larger variety of materials to visually impaired persons. The advantages of the electronic notetaker are discussed.

Mangold, S. (1990). Keynote address, Saskatchewan, Canada.

Statement taken from keynote address by Dr. Sally Mangold, March, 1990.

Mangold, S., & Mangold, P. (1989). Selecting the most appropriate primary learning medium for students with functional vision. *Journal of Visual Impairment & Blindness, 83,* 294-296.

Various primary and secondary learning media that concentrate on five major elements for the proper assessment of a student's functional vision are presented: (1) working distance from the page; (2) portability of reading skills; (3) reading rates and accuracy; (4) visual fatigue; (5) interpreting assessment results. Encouraging positive attitudes in the student and continuous evaluation and reevaluation are essential whatever the learning medium.

BIBLIOGRAPHY

Poppe, K.J. (1991) *Distribution of quota registrants in 1990 by grade placement, visual acuity, reading medium, school or agency type, and age: A replication of Wright's 1988 study.* Unpublished manuscript. Department of Educational and Technical Research, American Printing House for the Blind, Louisville, Kentucky.

This report details, via a table-to-table discussion, the distribution of the 1990 quota registrants among categories defining grade placement, visual acuity, reading medium, type of enrolling school or agency, and age. Additional attention is given to comparing the information reported in this study to the 1987 Registration data.

Rex, E.J. (1989). Issues related to literacy of legally blind learners. *Journal of Visual Impairment & Blindness, 83,* 306-307, 310-313.

The author responds to the issues about braille usage contained in articles and comments appearing in the June 1989 edition of the *Journal of Visual Impairment & Blindness.* Factors influencing the decline in braille literacy, such as the changing populations of nonreaders and low vision learners, and the negative perception of the code itself are outlined. The author also addresses the delivery of educational services of the blind, the questioned competency of teachers, and the interpretation of legislation concerning the provision of braille instruction to legally blind children.

Schroeder, F. (1989). Literacy: The key to opportunity. *Journal of Visual Impairment & Blindness, 83,* 290-293.

This article outlines the National Federation of the Blind's perception of braille as the means to literacy, as a tool symbolic not of inferiority, but of opportunity. Decreased braille literacy is attributed to the negative attitudes toward blindness and inadequate training of teachers and other professionals in the field. Once professionals develop accurate beliefs about the competence of blind persons, there will be a resurgence of literacy in the blind population. The case study of a low vision child whose parents have struggled to obtain braille instruction is presented; "braille bills" are suggested as a possible solution to such a struggle.

Spungin, S.J. (1990). *Braille literacy: Issues for blind persons, families, professionals, and producers of braille.* New York: American Foundation for the Blind.

This pamphlet lists common explanations for the increased numbers of illiterate blind people in the United States. The author provides possible solutions to braille literacy and asserts that braille is the medium that ensures equality between blind and sighted persons with respect to written communication. Also detailed is how the American Foundation for the Blind is supporting the nationwide campaign for a more literate United States via various literary projects and activities.

Stephens, O. (1989). Braille — Implications for living. *Journal of Visual Impairment & Blindness, 83,* 288-289.

Two contrasting themes are developed: (1) the prime importance of braille as the only medium of literacy available to blind persons; and (2) the widely perceived de-emphasis of braille instruction in the United States. Resolutions of the American Council of the Blind are summarized, asserting the position that removal of deficiencies in the quantity and quality of braille instruction should be given high priority.

BIBLIOGRAPHY

Swenson, A.M. (1988). Using an integrated literacy curriculum with beginning braille readers. *Journal of Visual Impairment & Blindness, 83,* 366-338.

This paper explains how beginning braille readers may benefit from an integrated literacy curriculum that reflects the interrelationships of oral language, reading, and writing and stresses the pleasureable and purposeful aspects of literacy. Integrating braille materials into daily curriculum activies can assist students to make the connection between reading and writing and to begin to write and read.

Wright, S. (1988). *Distribution of quota registrants in 1987: Grade placement, visual acuity, reading medium, school or agency type, and age.* Unpublished manuscript. Department of Educational Research, American Printing House for the Blind, Louisville, Kentucky.

This report details, via a table-to-table discussion, the distribution of the 1987 quota registrants among categories defining grade placement, visual acuity, reading medium, type of enrolling school or agency, and age.

*Additional articles which address braille literacy of blind and visually impaired persons can be found in many issues of the following journals:

Braille Forum

Braille Monitor

Future Reflections

Journal of Visual Impairment & Blindness RE: view

REFERENCES

Allman, C. (1991). *Technical assistance paper.* Florida Department of Education.

Association for Education and Rehabilitation of the Blind and Visually Impaired. (1988). *AER yearbook of the Association for Education and Rehabilitation of the Blind and Visually Impaired: 1987.* Alexandria, Virginia.

Barnhart, C.L., & Barnhart, R.K. (Eds.) (1982). *The World Book Dictionary.* Chicago: World Book-Childcraft International.

Barraga, N. (1986). Sensory perceptual development. In G. Scholl (Ed.), *Foundations of education for blind and visually handicapped children and youth: Theory and practice.* New York: American Foundation for the Blind, pp. 83-98.

Cates, D.L., & Sowell, V.M. (1989). Using computers to improve braille reading speed: A review of the literature. *Journal of Visual Impairment & Blindness, 83,* 361-364.

Colenbrander, A. (1977). Dimensions of visual performance. *Archives of American Academy of Ophthalmology, 83,* 332-337.

Corn, A., & Ryser, G. (1989). Access to print for students with low vision. *Journal of Visual Impairment & Blindness, 83,* 340-349.

Council of Executives of American Residential Schools for the Visually Handicapped. (1990). Literacy for blind and visually impaired school-age students: A position paper of the Council of Executives of American Residential Schools for the Visually Handicapped. *RE: view, 22(3),* 159-163.

Crespo, S.E. (1989). The braille system in Latin America. *Journal of Visual Impairment & Blindness, 83,* 317-318

Gashel, J. (1988). National convention calls for braille literacy. *Future Reflections,* Fall, 31-32.

Huebner, K.M. (1989). Daily uses of braille as told by four adult braille users. *Journal of Visual Impairment & Blindness, 83,* 308-309.

Koenig, A.J., & Holbrook, M.C. (1989). Determining the reading medium for students with visual impairments: A diagnostic teaching approach. *Journal of Visual Impairment & Blindness, 83,* 296-302.

Koenig, A.J., & Holbrook, M. C. (1991). Determining the reading medium for visually impaired students via diagnostic teaching. *Journal of Visual Impairment & Blindness,* 85(2), 61-68.

Koenig, A.J., & Ross, D. B. (1991). A procedure to evaluate the relative effectiveness of reading in large and regular print. *Journal of Visual Impairment & Blindness,* 85(5), 198-204.

REFERENCES

Mack, C. (1989). The impact of technology on braille literacy. *Journal of Visual Impairment & Blindness, 83,* 314.

Mangold, S. (1990). Keynote address, Saskatchewan, Canada.

Mangold, S., & Mangold, P. (1989). Selecting the most appropriate primary learning medium for students with functional vision. *Journal of Visual Impairment & Blindness, 83,* 294-296.

Maryland School for the Blind. (1987). *The role of braille in the education of blind and visually impaired children at the Maryland School for the Blind.* Baltimore, Maryland.

Poppe, K.J. (1991) *Distribution of quota registrants in 1990 by grade placement, visual acuity, reading medium, school or agency type, and age: A replication of Wright's 1988 study.* Unpublished manuscript. Department of Educational and Technical Research, American Printing House for the Blind, Louisville, Kentucky.

Rex, E.J. (1989). Issues related to literacy of legally blind learners. *Journal of Visual Impairment & Blindness, 83,* 306-307, 310-313.

Schroeder, F. (1989) Literacy: The key to opportunity. *Journal of Visual Impairment & Blindness, 83,* 290-293.

Spungin, S.J. (1990). *Braille Literacy: Issues.* Washington, DC: American Foundation for the Blind.

Spungin, S.J. (1990). *Braille literacy: Issues for blind persons, families, professionals, and producers of braille.* New York: American Foundation for the Blind.

Stephens, O. (1989). Braille — Implications for living. *Journal of Visual Impairment & Blindness, 83,* 288-289.

Swenson, A.M. (1988). Using an integrated literacy curriculum with beginning braille readers. *Journal of Visual Impairment & Blindness, 83,* 336-338.

Wright, S. (1988). *Distribution of quota registrants in 1987: Grade placement, visual acuity, reading medium, school or agency type, and age.* Unpublished manuscript. Department of Educational Research, American Printing House for the Blind, Louisville, Kentucky.

Statistical Data ■

APPENDIX A

The data presented in this appendix are not intended to be inclusive of all available data on each topic. They are simply overviews of the prevalence of visual impairment in the United States, reading media and program type, and reading speeds of visually impaired students. Data in these categories are extremely difficult to gather because of the diversity of the population itself and the diversity of the educational environments in which visually impaired students are taught. Therefore, interpretations of the data presented here should be made with caution.

ESTIMATED 1987 PREVALENCE OF LEGAL BLINDNESS BY AGE, BASED ON 1970 ESTIMATED RATES: U.S., 1987*

Age group (years)	U.S. Population projections (000's)	LEGAL BLINDNESS Prevalence rates per 100,000 population	Prevalence estimates (rounded)
Under 5	18,866	42	8,000
5-19	51,842	62	32,000
20-44	97,510	106	103,000
45-64	44,942	246	111,000
65-74	17,408	637	111,000
75-84	9,592	1,513	145,000
85 & over	2,925	3,003	88,000
TOTALS	243,085	246	598,000

ESTIMATED 1987 PREVALENCE OF NONINSTITUTIONALIZED "SEVERE VISUAL IMPAIRMENT" BY AGE BASED ON 1977 ESTIMATED RATES: U.S., 1987*

Age group (years)	U.S. Population projections (000's)	SEVERE VISUAL IMPAIRMENT** Prevalence rates per 100,000 population	Prevalence estimates (rounded)
Under 18	63,461	60	38,000
18-44	104,757	130	136,000
45-64	44,942	600	270,000
65-74	17,408	2,200	383,000
75-84	9,592	6,490	622,000
85 & over	2,925	18,150	531,000
TOTALS	243,085	815	1,980,000

* Figures reported in this table were annotated from the *AER Yearbook of the Association for Education and Rehabilitation of the Blind and Visually Impaired: 1987* (pp. 121-122)

** Defined as the inability to read ordinary newsprint even with correction

APH DISTRIBUTION OF FEDERAL QUOTA BASED ON THE REGISTRATION OF ELIGIBLE STUDENTS: 1988-1990

READING MEDIA	TYPE OF PROGRAM				
	RESIDENTIAL	STATE	MULTIHANDICAPPED	REHABILITATION	TOTALS
VISUAL					
1988	1381	12316	114	304	14115
1989	1277	12718	109	266	14370
1990	1194	12834	112	286	14426
BRAILLE					
1988	1204	3355	31	810	5400
1989	1151	3308	20	992	5471
1990	1171	3368	22	1069	5630
AUDITORY					
1988	355	5950	194	950	7449
1989	325	5863	218	628	7034
1990	310	5171	180	738	6399
PREREADER					
1988	451	3485	29	58	4023
1989	594	3870	48	106	4618
1990	696	4521	52	157	5426
NONREADER					
1988	951	11377	1025	481	13834
1989	976	12671	1002	342	14991
1990	948	13984	943	315	16190
TOTALS					
1988	4342	36483	1393	2603	44821
1989	4323	38430	1397	2334	46484
1990	4319	39878	1309	2565	48071

Explanation of Reading Media

Visual readers — Students primarily using print in their studies

Braille readers — Students primarily using braille in their studies

Auditory readers — Students primarily using a reader or auditory materials in their studies

Prereaders — Students working on or toward a readiness level (e.g., all infants and preschoolers; older student with reading potential)

Nonreaders — Nonreading students; students who show no reading potential; students who do not fall into any of the above categories

STUDENT TOTALS* AND PERCENTAGES BY PROGRAM TYPE

PROGRAM	YEAR					
	1988		1989		1990	
	Total	%	Total	%	Total	%
Residential	4342	10	4323	9	4319	9
State	36483	81	38430	83	39878	83
Multihandicapped	1393	3	1397	3	1309	3
Rehabilitation	2603	6	2334	5	2565	5

STUDENT TOTALS* AND PERCENTAGES OF READING MEDIUM

PROGRAM	YEAR					
	1988		1989		1990	
	Total	%	Total	%	Total	%
Visual Readers	14115	31	14370	31	14426	30
Braille Readers	5400	12	5471	12	5630	12
Auditory Readers	7449	17	7034	15	6399	13
Prereaders	4023	9	4618	10	5426	11
Nonreaders	13834	31	14991	32	16190	34

* Totals are taken from the chart on the previous page that illustrates the distribution of legally blind students according to "reading media" and "type of program" as reported to the American Printing House for the Blind during the years of 1988-1990.

BRAILLE READING SPEED STUDIES 1918-1969

Researcher	Year	Subjects	Reading	Results
Hayes, S.	1918-1920	Residential students	New York Point American Braille (uncontracted)	A mean reading rate of 64 words per minute (wpm) was found. The range was from 30 wpm in ninth grade. Hayes questioned teaching children to read braille if the rate could not be brought to 60 wpm. He even asked how many graduates would continue to read if they read so slowly.
Athearn, C.R., Campbell (Mrs.) H., & Lavos, G.	1944	Students in grades 9-11	American Literary Braille, Grade 2	Measures of reading rates of Reader's Digest materials were obtained; a mean reading rate of 78 wpm was reported. Most research suggests very little difference in speeds for Grade 2 Braille than for less contracted systems.
Lowenfeld, B.	1945	Braille readers in grades 4 to 8	American Literary Braille, Grade 2	Speeds from 53 wpm to 65 wpm were reported. Lowenfeld was actually comparing talking book and braille reading.
Meyers, E., & Ethington, D.	1956	275 students in grades 5 to 12 in state schools for the blind; 167 blind adult volunteers	American Literary Braille, Grade 2	Meyers & Ethington studied braille spacing primarily. However, they also obtained reading rates in the process of conducting their studies. Subjects read sections from a book of 5th grade level. Mean reading rate for the school children

BRAILLE READING SPEED STUDIES
1918-1969 *(continued)*

Researcher	Year	Subjects	Reading	Results
				was 68 wpm. The mean rate for grades 5 to 8 was 63 wpm; for grades 9-12, 86 wpm; and for adults, 90 wpm.
Foulke, E.	1962	Students in grades 6 to 8	Literary and science materials — 2,100 words	Mean braille reading rates were: Science, 57 wpm; Literary, 72 wpm.
Nolan, C.Y., & Morris, J.E.	1966	208 subjects in grades 4 to 6; 174 subjects in grades 9 to 12. Subjects were from public and residential schools.	Literature, science, social studies selections with 2,100 words each. Readability level was appropriate for grade level.	This study, conducted by the American Printing House for the Blind, examined the efficiency of listening in learning by the blind as compared to the reading of braille or large type. Mean braille reading rates for all materials were: Elementary grades, 4 to 6, 52-57 wpm; Secondary grades, 9 to 12, 66-74 wpm. These rates were obtained under instructions to read material carefully. Subjects were aware that they would be tested on comprehension.
Lowenfeld, B., Abel, G.L., & Hatlen, P.	1969	Students in grades 4 and 8. Students were from both public and residential schools.	STEP Reading Comprehension Test: Form 4B (Administered to fourth graders) and Form 3B (administered to eighth graders)	Fourth grade subjects in public and residential schools had mean reading rates of 84 and 72 wpm, respectively. Eighth grade subjects in public and residential schools had mean reading rates of 149 and 116 wpm, respectively. Spuriously high rates are due to: a) ease of reading material, b) no test of comprehension, and c) nature of subjects.

APPENDIX B

The appendix contains documents prepared by Mangold and Mangold (1989), the American Foundation for the Blind (1990), the Council of Executives of Americal Residential Schools for the Visually Handicapped (1990), the Florida Department of Education (1990), and the Maryland School for the Blind (1990) which discuss factors to be considered in selecting learning media for visually impaired children as well as some other issues related to braille and print literacy. Issues included in the documents *must* be understood before, and during, assessment and evaluation of a visually impaired child's need for specific learning media.

This appendix also contains a list of functional vision assessment instruments taken from the document prepared by the Florida Department of Education. This is not a complete list of such instruments, but it may provide guidance to those using the guidelines. Specific instruments in other areas of assessment are not given since there are too many to include here and they are easier to locate than those on functional vision assessment.

A final section of this appendix is a chart (Barraga, 1986; Colenbrander, 1977) which defines the levels of visual disability discussed in Section III of the guidelines.

■ Major considerations for selection of learning medium

There are five major considerations when selecting a primary learning medium for a student with functional vision:

1) Working distance from the page

Writing as well as reading performance should be assessed. Many students require a high degree of magnification to read. Note whether the student has enough working distance to maintain focus while writing. The greater the distance between the eye and the working surface, the more easily the student can maintain focus for extended periods of time.

2) Portability of reading skills

The ability to read back one's own handwriting should be a portable skill. The student who cannot read back his/her own writing, with or without an optical aid, will not be able to read back telephone numbers obtained from an information operator while in a phone booth. Nor can the student read a grocery list in a market or gain rapid access to bus schedules while at a bus stop.

Independent academic achievement which leads to successful vocational placement requires that a student be able to take notes and access them immediately and independently.

3) Reading rates and accuracy

A student who uses the most appropriate primary learning medium will show measurable growth in reading rates as well as reading vocabulary and reading comprehension. A reading rate of at least 60 words per minute might be considered acceptable for a student working at a first grade level. If a fourth- or fifth-grade student is still reading 60 words per minute and is not demonstrating increases in reading rates, that student will have a difficult time keeping up with peers and upon graduating from high school will not be eligible for many jobs that have an entry level reading requirement of at least 70 words per minute.

The average reading speed of adult braille readers is about 115 words per minute. Some braille readers have been timed at more than 250 words per minute. A few braille readers have been times at more than 400 words per minute.

Some individuals never excel in reading, no matter what their visual acuity. They develop a life-style that does not require rapid reading. Some visually impaired students will not enjoy reading under any conditions. There are, however, many visually impaired students who demonstrate academic interest and ability, but have not developed adequate reading skills.

4) Visual fatigue

Fatigue is difficult to measure objectively. The signs of fatigue are sometimes misunderstood. Teachers sometimes note the number of minutes a student can read before beginning to make errors or exhibit physical signs of fatigue. Such measurements may vary greatly, depending on the time of day, lighting conditions, motivation, and a host of other variables. Periodic functional visual assessments may reveal the specific conditions that contribute to fatigue in a given student.

Students must be able to work efficiently and comfortably for the entire academic day, during after-school study periods, and still have enough energy to enjoy social activities. A student who can complete only half of the math problems or half of the reading assignment due to fatigue is not developing viable prevocational skills. It is difficult to maintain high self-esteem when those around you do twice as much work in half the time.

5) Interpreting assessment results

Objective assessment of a student's performance and evaluation of rate of progress should be an ongoing process. Objective assessment should not be influenced by the limitations of any given delivery system. First, establish what the student's primary learning medium should be, and second, consider how to design a delivery system to meet those needs.

Some students know exactly how their performance compares with their classmates. If they are not aware of their own level of performance, it is important to initiate dialogue that will lead to an understanding of the level of performance in relation to abilities.

Teachers and parents should expect consistant progress, and make changes in the learning environment when progress is not exhibited. These changes should be recorded and any resulting improvement in performance noted.

Identify variables in the learning environment and examine them individually. Determine how each variable affects student performance. Can the student, for example, identify letters of different sizes? Does the reduction of glare on a work surface significantly affect student performance? What kind of pictorial representation can the student correctly identify? Are texts that utilize colors of type or background as easily read as black on white? Are short columns more easily read than full-length lines.

Include the student as you analyze the results of the assessment. Discuss how the student's performance was affected by each variable. A teacher should not sound disappointed concerning any aspect of the student's performance. The results should be discussed objectively. If appropriate, discuss other learning media as they relate to accomplishing specific tasks. The student's performance should be treated objectively, yet the student should receive high praise for effort expended.

Source: Mangold, S. & Mangold, P. (1989). Selecting the most appropriate primary learning medium for students with functional vision. *Journal of Visual Impairment & Blindness, 83,* 294-296.

■ Factors to consider

A number of specific factors must be considered in relation to each child when the decision regarding a reading medium is being made or reviewed. A professional and comprehensive assessment of each factor must be done initially by representatives of the appropriate disciplines and reviewed periodically or as the need arises to verify that the reading medium chosen was the appropriate one. These factors include the following:

- Visual status:
  The nature of the child's visual disability and its prognosis must be considered based upon a recent examination by an ophthalmologist. The child's functional visual abilities have to be evaluated. Consideration must be given to age of onset of the visual disability, and whether or not visual functioning can be improved through the use of low vision aids.

- **General learning abilities:**
  The child's learning modalities, intellectual abilities, sensory, perceptual, and motor functions are assessed through comprehensive evaluations by members of the team, such as the teacher, psychologist, occupational therapist, speech and language specialist, audiologist, low vision specialist, and others.

- **Personal factors:**
  The child's interest in and motivation for a particular reading medium must be evaluated along with related self-perceptions as a visually impaired person.

- **Social factors:**
  The wishes and attitudes of parents and other family members must be considered.

- **Reading efficiency:**
  Various reading efficiency indicators must be considered in relation to the decision of the most appropriate reading and learning medium for a child. These indicators include but are not limited to the following: 1) progress in reading relative to developmental age and overall ability; 2) reading speed, comprehension, and accuracy; 3) fatigue; and 4) working distance from the page.

- **Current educational level:**
  The student who is learning to read for the first time presents a different set of circumstances from the student who has already learned to read in one medium and is now learning how to read in a different medium.

An integrated consideration of all of the above factors should be made by a team of the appropriate professionals working with the student and parents. As the age of the student increases, the importance of the student's input into the decision increases as well.

Source: Maryland School for the Blind. (1987). *The role of braille in the education of blind and visually impaired children at the Maryland School for the Blind.* Baltimore: Author.

■ Determination of Mode of Reading for Visually Impaired Learners

The mode of reading is the determined communication medium that a student will use for reading and writing. Often it is the teacher of students who are visually impaired who assess the appropriate communication medium for their students. For many students the assessment and subsequent recommendation of the communication medium is a straight-forward process. For students who are considerably low vision (usually legally blind with some residual vision) this assessment and recommendation can be a complicated process.

The assessment of mode of reading occurs as part of initial eligibility. The mode of reading should be reviewed yearly at the IEP meeting and must be reevaluated at least every 3 years. This assessment is usually part of the functional vision observation and should be addressed on the Individual Educational Plan (IEP).

I. Definitions Relative to the Concept of Mode of Reading

A. **Primary Mode of Reading**: the most frequently used medium during classroom instruction; medium used in wide variety of settings and medium used for reading and writing.

B. **Secondary Mode of Reading**: the medium that is occasionally appropriate; eliminates fatigue and is learned to allow for ease in completion of tasks.

C. **Regular Print**: material that is available commercially and readily accessible to the general public.

D. **Large Print**: material that is enlarged usually to 18 point or larger.

E. **Accommodation**: movement of regular or large print in relation to the field of vision for purposes of reading or writing.

F. **Magnification**: use of lens, optical aids, or other technology to enlarge regular or large print.

G. **Braille**: material transcribed into Standard English (Grade II) Braille.

H. **Supplements to Reading**: tapes, talking books, Optacon, Kurzweil, computers, and other technology.

II. Procedure for Determining Mode of Reading

There are three major aspects of determining the mode of reading for a visually impaired student. These aspects include:

Source: Allman, C. (1991). *Technical assistance paper.* Florida Department of Education.

A. **Child characteristics** of age, cognitive level, educational level, and eye medical prognosis, visual fields, and visual acuities are initial considerations to be recorded. These factors are obtained from psychological reports, educational evaluations, and medical reports.

B. **Mechanical factors** include reading accuracy, rate, and comprehension; fatigue and stamina; physical dexterity; work distance from the page; posture during reading and writing, lighting levels needed for optimal visual functioning; and print factors such as type size, contrast, and clarity. Each of these factors can be assessed through use of the functional vision observation. In addition these factors should be assessed in any environment frequented by the student (home, school, and work).

*C. **Social factors** include medium or technology portability and availability; perceived and expressed needs and desires of the student and family; social aspects perceived by the student; and student motivation and desire. These factors will be assessed through discussions and observations of the child and the family relative to strengths and weaknesses of reading media and technology.

Once the above factors are identified, questions (see Section III) can be addressed and decisions of appropriate mode of reading can be discussed and recommended by the IEP committee.

III. Questions to Be Considered

Consideration of these questions will lay the groundwork for addressing the appropriate mode of reading for a visually impaired child.

A. Child Characteristics

1. **Is the child old enough for instruction in reading?** If the child is not old enough to begin reading then vision stimulation and tactile discrimination exercises can be used to further observe the abilities of the young or multihandicapped child. To assist in answering this question consultation with the parent and child's teacher is recommended.

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* As stated in Section II: Assessment and Evaluation, p.9, "The lack of quality and availability of these resources should *not* be used as a reason for the selection of the learning medium/media. The results of assessment in the areas should be used to require that the resources be provided in the educational environments."

2. **What is the cognitive and educational level of the child?** Examination of the cognitive and educational levels will indicate the possible extent to which any reading program in any mode would be pursued. Consultation with a teacher of mentally handicapped children is recommended if the child is cognitively classified as educable mentally or is educationally functioning two years below the age appropriate level.

3. **Is the eye medical prognosis of a progressive nature?** Indication of a progressive loss of vision suggests frequent reevaluation of the appropriate mode of reading for a visually impaired student. Input from parents and all persons who work with the child is imperative, particularly if changes in visual functioning are observed.

4. **Does a visual field restriction exist? If so, how restrictive is it?** Restrictions in the visual field may affect the use of magnifiers or other technology when print is an option for a visually impaired student.

5. **What is the visual acuity? Does the acuity fluctuate?** While the visual acuity is not a sole determinant of the mode of reading, it is certainly an indication that will suggest reading modes to be considered. For instance, braille is a justified consideration for students who are totally blind. However, the amount of usable vision of a legally blind student will fluctuate from one individual to another and even partially sighted students may experience varying degrees of functional vision. For purposes of this book, it is recommended that braille and accommodating print be considerations for students classified as legally blind. The other factors discussed in this paper will help determine if one or the other or both modes of reading will be appropriate.

B. Mechanical Factors

1. **Is the student keeping up with his peers in quality and quantity of work requiring reading and writing? If needed, can the student take notes in the chosen medium? What is the number of words read per minute, the reading accuracy rate, and the comprehension rate?** An estimate of these rates can be obtained on students who are already reading and should be estimated on a variety of media (large print, regular print, accomodated print,

magnified print). Rates that are considerably lower than those of other students in the visually impaired student's class are an indication that the visually impaired student may not be able to maintain the workload of the class using print medium. The alternative of braille should be considered. Braille reading rates, accuracy rates, and comprehension rates that are considerably lower than other braille students or lower than expected by the teacher of the visually impaired may indicate a need for braille remediation or consideration of the use of tape or other auditory m ediums particularly for reading large quantities of matierial. Remember that students need to be able to write as well as to read in the chosen medium. As students learn to read, the answers to these questions should be a consideration in addressing the mode of reading on subsequent evaluations.

2. **Does the student experience unusual fatigue in reading or writing assignments in the chosen medium? Can the student pursue assignments for an amount of time commensurate with his peers?** If the student's fatigue or stamina is considerably different from other students in his class, the primary mode of reading may need either an adjustment, a secondary mode of reading, or a supplement so that the visually impaired student can maintain the workload of the class.

3. **Does the student have the physical dexterity to carry out the mechanical aspects of the reading process (page turning, book holding, head control)?** Young students or students with multihandicaps may have physical disabilities or immaturity that will make it difficult to evaluate some aspects of the reading process. As reading readiness activities are implemented for these students the teacher should be recording the factors discussed in this paper for future reference in recommending an appropriate reading mode.

4. **What is the student's working distance from the page (including the position during reading and writing)?** This question is a physical and a social consideration. Proper posture in reading helps to alleviate fatigue. In addition, the social ramifications of reading print with one's nose in very close proximity to the paper or screen (in use of a closed circuit TV system) is a consideration for some students.

5. **What lighting levels are needed for optimum visual functioning? Is proper lighting available?** The adjustment of lighting levels should be made in all of the student's environments particularly if the student is a print reader and it has been determined that lighting is a critical factor to optimal functioning. While lighting is not a factor for determining mode of reading, it is a factor to consider once print has been determined to be the appropriate mode of reading.

6. **What type size, contrast, or clarity of print (serif or sanserif) is needed by the student? Is the type size readily available? How do these factors relate to fatigue and reading rates?** Print readers should be assessed on these factors with considerable difficulties indicating a possible change in primary mode of reading.

C. **Social Factors**

1. **Will the chosen medium meet the needs of the student in terms of portability and availability (including cost)?** The student and his family will need to address this question and possibly pursue sources of funding or other accomodations that will allow the student to use the chosen mode of reading effectively.

2. **What are the perceived and the expressed needs and desires of the student and his family?** If a student and his family seem socially sensitive to the perceived use of a mode of reading (any mode other than regular print) the choice of an appropriate mode of reading may require experimentation, counseling, exposure to others using various modes, and time to adjust to use of a chosen mode of reading and writing.

3. **Is the student motivated to use a chosen mode of reading?** Some students take time to adjust to the idea of using braille, large print, or other accomodations. Whichever mode is chosen, the student must have the desire and motivation to pursue proper skills and use of the medium.

The factors discussed above should be helpful in determining the mode of reading and writing for visually impaired students. The primary mode of reading may be a combination of braille and large print or modification to a regular print. Any medium that will benefit the student in his academic, social, vocational, and leisure goals should be addressed at some time in the student's educational experience. The IEP will reflect time spent on training students in various media as needed. These unique skills (braille, listening skills, use of accommodation, magnification, computers, or other technology) will require special instruction from the teacher of the visually impaired.

■ Braille Literacy: Issues

- Braille is the primary medium for literacy for totally blind people for both reading and writing. There are a variety of braille codes which include literary, math, foreign languages, music and computer.
- There are no quality standards for teaching braille in colleges and universities and no refresher courses available after graduation.
- There are no up-to-date materials to teach braille designed for use in teacher preparation programs for blind individuals themselves, or for their families.
- Nearly 8,500 professionals are serving about 133,000 blind and visually impaired children and adults, nearly a 1 to 16 ratio. (Association for the Education and Rehabilitation of the Blind and Visually Impaired)
- There is a need for 1,400 certified teachers for unserved and underserved blind and visually impaired children. (Tuttle and Heinze)
- The most popular service delivery model is the itinerant program. A student-teacher ratio of 1 to 16 and travel over a large geographic area does not permit the itinerant teacher enough time to teach braille as well as other skills.
- Programs exist in 16 (32%) of the 50 states which means that the more than two-thirds of the states have no preparation programs for teachers of the visually handicapped, and even in those states in which one program exists, that program cannot serve the needs of the entire state because of vast travel distances. (Huebner)
- Issues of working with a low incidence population of blind and visually handicapped individuals are compounded by the heterogeneity of students including those with multiple disabilities.
- Sixty-three percent of the existing programs were conducted by one full-time faculty member, while only 37% had two or more full-time faculty members. (Huebner)
- Only 44% of programs in teacher preparation for the visually handicapped are receiving funds by OSERS. (Silberman, et al.)
- Recent Department of Education actions:
  Notice of proposed funding priorities eliminates absolute funding priority for low incidence populations.
- Congresstional Developments:
  Zero funding of P.L. 89-313 by the House of Representatives.

Source: Spungin, S. (1990). *Braille literacy: Issues*. Washington, D.C.: American Foundation for the Blind

LITERACY FOR BLIND AND VISUALLY IMPAIRED SCHOOL-AGE STUDENTS

A Position Paper of the Council of Executives of American Residential Schools for the Visually Handicapped

Blind and visually impaired school-age students need to develop their maximum potential in reading, writing, and computing to fulfill their current and future opportunities and responsibilities. The Council of Executives of American Residential Schools for the Visually Handicapped (CEARSVH) defines literacy as mastery and application of reading, writing, and computing skills to allow an individual to function efficiently now and in the future.

Considerable discussion and controversy currently exist over issues concerning literacy. This debate parallels the call in regular education for re-emphasis on basic skills to counter the decline in student achievement scores during the past decade. In addition, consumers and professionals who work with visually impaired students are concerned about diminishing levels of achievement in literacy skill. Braille usage, and instruction in the use of abacus, slate and stylus, specialized Braille code, and other skills. The membership of CEARSVH determined that in light of the current discussion and controversy over modes of reading, writing, and computing, it would be beneficial to develop a position paper that strongly re-emphasized the importance of functional literacy skills for the students for whom the CEARSVH membership has educational responsibility. The issues in the current debate over literacy for blind and visually impaired students and the positions adopted by the Council on those issues are discussed below.

1. Stronger Emphasis on Instruction in Literacy Skills

The Issue

Literacy among blind and visually impaired students may have been deemphasized inadvertently due to competing curricular offerings, required courses, special education instruction, and related service provisions identified on the student's Individual Education Plan (IEP).

Source: Council of Executives of American Residential Schools for the Visually Handicapped. (1990). Literacy for blind and visually impaired school-age students: A position paper of the Council of Executives of American Residential Schools for the Visually Handicapped. *RE:view*, 22(3), 159-163.

CEARSVH Position

The Council encourages a strong emphasis on the mastery of literacy skills. It fully supports providing all curricular courses and related services identified on the student's IEP but strongly opposes accommodating those needs at the expense of time scheduled for reading, writing, and computing skills. To make sufficient time for literacy skill training during a student's schooling, the Council recommends that students (a) be encouraged or allowed to delay graduation and to spend additional years in school, (b) enroll in summer school programs in residential or public schools, and/or (c) enroll in residential school programs on a short-term basis if the needed service at the recommended frequency and intensity is not available in the public school program.

The Council recommends that guidelines and standards for frequency and intensity be established, implemented, and monitored to ensure that all educational placements have appropriate service provisions and that no student is underserved.

2. Individualized Selection of the Mode of Reading, Writing, and Computing

The Issue

Braille usage, in some cases, has been significantly de-emphasized and some students have been restricted inappropriately to print or auditory modes. Although these modes may be more available and accessible, they may not be functionally more efficient for current or future reading, writing, or computing needs.

CEARSVH Position

The Council recommends that an IEP multidisciplinary team determine which mode is the most appropriate and efficient to meet the individual student's needs for reading, writing, and computing. This decision should be based on ongoing, comprehensive assessments that determine the individual student's present functioning levels, current and future needs, learning style, and other variables such as visual prognosis, reading rates, and comprehension.

The Council rejects any wholesale generalization that one mode is superior to another but recognizes that one mode may be better than another for a particular child's individual needs. For example, although the use of the print mode may be a very valid goal, given the wide availability of this medium, that fact should not overrule consideration of functional efficiency, if in the estimation of the student's IEP multidisciplinary team, the use of print is less efficient than another option.

The Council encourages flexibility in the development of IEPs. IEPs for students may include instruction in dual literacy modes, such as Braille and print, if their assessments conclude they need and can benefit from both.

The Council further supports and encourages informing parents and students of all potentially relevant, appropriate, and efficient options for developing literacy.

3. Legislation Mandating One Mode

The Issue

Legislation requiring all blind and visually impaired students to receive Braille instruction would undermine, usurp, or supplant state and federal laws that mandate determination of special education provisions by an IEP multidisciplinary team based on comprehensive assessment and program planning specific to an individual student's needs. Morever, such class-action legislation, which presupposes that all blind and visually impaired students function on the same level and have the same needs, would restrict many visually impaired students who appropriately need and could effectively use print or other modes.

CEARSVH Position

The Council strongly believes that the selection of modes of reading, writing, and computing should be made by an IEP team on the basis of an ongoing, comprehensive assessment and determination of the student's present functioning levels, learning styles, visual prognosis, current and future needs, and other variables. The Council is strongly opposed to any legislation that would require each and every blind and visually impaired student, on a wholesale, class-action basis to use and receive instruction in one mode irrespective of, or in disregard of, his or her individual needs.

4. Technical Assistance

The Issue

Today teachers of the visually handicapped teach students with a broader range of needs than in the past; programs with a single teacher of the visually handicapped may not be able to meet the diverse and broad range of student needs.

CEARSVH Position

The Council encourages its members to assist university teacher training programs by providing preservice practica, extended internships, and continuing education opportunities in which prospective teachers can have meaningful, realistic, and comprehensive opportunities to become proficient in teaching various literacy skills. Prospective teachers should be made aware of, and encouraged to take advantage of, outreach programs, staff development, or technical assistance services offered through many residential schools if they are planning to be employed in itinerant or other single teacher programs where supervisors may not be knowledgeable in specialized adapted literacy modes and/or professional colleagues may not be available for consultation and assistance.

5. Continuing Education Opportunities for Experienced Staff

The Issue

Inservice programs may not be available to teachers who have lost proficiency in the Braille code or other literacy skills because they have not recently had students needing this training.

CEARSVH Position

The Council supports and encourages providing refresher inservice training opportunities to teachers who have not retained skill proficiency. In those cases where experienced staff have not been exposed to new literacy skill modes, for example, computer technology, the membership further encourages providing continuing education opportunities.

6. Emphasis on Literary Skill Teaching Methodology

The Issue

Although preservice training programs require prospective teachers to master the Braille code and other literacy skills, the programs do not offer intensive, comprehensive, and indepth coursework and experiences in the methodology of teaching students to develop reading, writing, and computing skills.

CEARSVH Position

The Council encourages university teacher training programs to focus more comprehensively on coursework and experiences in teaching methodology to ensure that prospective teachers develop competencies to teach literacy skills in all modes.

7. Accessibility of Adapted Educational Materials

The Issue

Blind and visually impaired students experience significant delays in receiving Braille materials. The absence of appropriate materials means that students who use Braille (a) cannot work independently, (b) are forced to use less appropriate alternative modes, and (c) do not keep pace with their peers or reach their level of achievement.

CEARSVH Position

The Council strongly recommends legislative mandates and/or incentives to publishers to provide Braille materials at the same time print versions are made available to nonhandicapped school-age students. With current advancements in computer technology, the simultaneous publication of print and Braille materials should be a reasonable goal. The Council asserts that it is discriminatory not to provide Braille materials at the same time nonhandicapped students are provided print materials. The Council agrees to cooperate and lend technical assistance to government agencies and publishers to provide access to information to which blind and visually impaired people are entitled.

NOTE: This paper was drafted in October 1988, revised the following year, and adopted by the Council in February 1990.

■ **Functional Vision Evaluations**

ANNOTATED BIBLIOGRAPHY

Barraga, N. (1980). *Program to develop efficiency in visual functioning.* Louisville, KY: American Printing House for the Blind.

Contains an evaluation of the level of visual functioning in low vision persons and provides a training program for efficient vision use. The program is based on normal developmental sequence of vision and can be used with students with a minimum mental age of three. Low Vision Observation Checklists and the Diagnostic Assessment Procedure Record Booklet can be ordered separately from the American Printing House for the Blind.

Bishop, V.E. (1988). Making choices in functional vision evaluations: "Noodles, needles, and haystacks." *Journal of Visual Impairment & Blindness, 82,* 94-99.

Provides formats for evaluating functional vision of preschool and school age visually handicapped students including multiply handicapped/visually handicapped children.

Brown, C.J., & Langley, M.D. (1984). *Diagnostic/prescriptive model for training interdisciplinary personnel working with profoundly mentally handicapped learners.* Tallahassee, FL: Department of Education, Bureau of Education for Exceptional Students.

Contains a section on functional vision assessment outcomes for profoundly handicapped learners that can be used as a checklist for assessing this population.

Chen, D., Friedman, C.T., & Calvello, G. (1990). *Parents and visually impaired infants (PAVII).* Louisville, KY: American Printing House for the Blind.

Contains a functional vision screening checklist with a sequence of development from birth to 12 months and observation suggestions for assessing infants.

Costello, K.B., Pinkney, P., & Scheffers, W. (1982). *Visual functioning assessment tool.* Chicago: Stoelting Company.

An informal assessment of visual functioning to be used in an educational setting.

Czerwinski, M.H. (1983). *Assessment of visual functioning: An educational guide.* New Jersey Commission for the Blind and Visually Impaired.

Contains a visual functioning checklist and assessment to the use of low vision aids and special equipment. Provides evaluation procedures for use of vision for near and distance tasks within the classroom. Most appropriate for school age visually impaired children with no additional handicaps.

Florida Department of Education. (1983). *Volume V-E: Project IVEY: Increasing visual efficiency.*

Provides a Functional Vision Evaluation most appropriate for young or multihandicapped children and vision stimulation activities appropriate for all ages.

Source: Allman, C. (1991). *Technical assistance paper.* Florida Department of Education.

ANNOTATED BIBLIOGRAPHY

Hazekamp, J., & Huebner, K.M. (1989). *Program planning and evaluation for blind and visually impaired students.* New York: American Foundation for the Blind.

Outlines what educational programs need to do to serve blind and visually impaired youngsters effectively. It includes a chapter on assessing vision and provides a condensed version of a functional vision checklist summary sheet reprinted from Mangold (1982).

Langley, M.B. (1980). *Functional vision inventory for the multiple and severely handicapped.* Chicago: Stoelting Co.

Contains valuable information on issues related to visual assessment of severely/profoundly handicapped, development of the visual process, a functional vision inventory profile, screening test, activities, and guidelines for evaluating multi-handicapped children. Information is also useful for assessing very young children.

Mangold, S.S. (1982). *A teachers' guide to the special educational needs of blind and visually handicapped children.* New York: American Foundation for the Blind.

A collection of curriculum and teaching techniques for use with visually impaired children. The guide contains a chapter on functional vision with criterion-referenced checklists.

Roessing, L.J. (1982). Functional vision: Criterion-referenced checklist. In S. Mangold (Ed.), *A teachers' guide to the special educational needs of blind and visually handicapped children.* New York: American Foundation for the Blind.

Functional vision assessment is briefly discussed and the author presents a functional vision checklist developed and field-tested in California.

San Francisco State University. (1985). *Vision assessment and program manual.* Reprinted by the Florida Department of Education.

Provides summary forms and a section on functional vision programming most appropriately used with multihandicapped, deaf-blind or very young children.

Swallow, R.M., Mangold, S., & Mangold, P. (1978). *Informal assessment of developmental skills for visually handicapped students.* New York: American Foundation for the Blind.

Contains a Cumulative Record of Visual Functioning of Children and Youth with Severe Visual Impairments and Functional Vision Report for Visually Handicapped Students Reading Print which are appropriate as functional vision observations.

- Equal access to education implies equal access to information.
- In today's information age . . . literacy represents the primary tool by which individuals compete . . .
- We need to define what we mean by blind children and braille users . . .
- Children who do not fit neatly into the categories of braille or print users deserve the option of learning both . . .
- Both braille and print must be viewed positively by students, teachers, and other service providers . . .
- The key element for decision makers is to select the medium/media which enables the student to be most proficient in learning and in life achievement.
- Expectations related to academic achievement should be the same for visually impaired students and normally sighted students.
- All visually impaired children have individual needs.
- Keyboarding and auditory materials are valuable supplements.
- Flexibility is the key to the use of all types of media for maximum literacy.

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